

1. Introduction

On August 14, 2003, large portions of the Midwest and Northeast United States and Ontario, Canada, experienced an electric power blackout. The outage affected an area with an estimated 50 million people and 61,800 megawatts (MW) of electric load in the states of Ohio, Michigan, Pennsylvania, New York, Vermont, Massachusetts, Connecticut, and New Jersey and the Canadian province of Ontario. The blackout began a few minutes after 4:00 pm Eastern Daylight Time (16:00 EDT), and power was not restored for 2 days in some parts of the United States. Parts of Ontario suffered rolling blackouts for more than a week before full power was restored.

On August 15, President George W. Bush and Prime Minister Jean Chrétien directed that a joint U.S.-Canada Power System Outage Task Force be established to investigate the causes of the blackout and how to reduce the possibility of future outages. They named U.S. Secretary of Energy Spencer Abraham and Herb Dhaliwal, Minister of Natural Resources, Canada, to chair the joint Task Force. Three other U.S. representatives and three other Canadian representatives were named to the Task Force. The U.S. members are Tom Ridge, Secretary of Homeland Security; Pat Wood, Chairman of the Federal Energy Regulatory Commission; and Nils Diaz, Chairman of the Nuclear Regulatory Commission. The Canadian members are Deputy Prime Minister John Manley, Deputy Prime Minister; Kenneth Vollman, Chairman of the National Energy Board; and Linda J. Keen, President and CEO of the Canadian Nuclear Safety Commission.

The Task Force divided its work into two phases:

- ◆ Phase I: Investigate the outage to determine its causes and why it was not contained.
- ◆ Phase II: Develop recommendations to reduce the possibility of future outages and minimize the scope of any that occur.

The Task Force created three Working Groups to assist in the Phase I investigation of the blackout—an Electric System Working Group (ESWG), a Nuclear Working Group (NWG), and a Security Working Group (SWG). They were tasked with overseeing and reviewing investigations of the conditions and events in their respective areas and determining whether they may have caused or affected the blackout. The Working Groups are made up of State and provincial representatives, Federal employees, and contractors working for the U.S. and Canadian government agencies represented on the Task Force.

This document provides an Interim Report, forwarded by the Working Groups, on the findings of the Phase I investigation. It presents the facts that the bi-national investigation has found regarding the causes of the blackout on August 14, 2003. The Working Groups and their analytic teams are confident of the accuracy of these facts and the analysis built upon them. This report does not offer speculations or assumptions not supported by evidence and analysis. Further, it does not attempt to draw broad conclusions or suggest policy recommendations; that task is to be undertaken in Phase II and is beyond the scope of the Phase I investigation.

This report will now be subject to public review and comment. The Working Groups will consider public commentary on the Interim Report and will oversee and review any additional analyses and investigation that may be required. This report will be finalized and made a part of the Task Force Final Report, which will also contain recommendations on how to minimize the likelihood and scope of future blackouts.

The Task Force will hold three public forums, or consultations, in which the public will have the opportunity to comment on this Interim Report and to present recommendations for consideration by the Working Groups and the Task Force.

The public may also submit comments and recommendations to the Task Force electronically or by mail. Electronic submissions may be sent to:

poweroutage@nrcan.gc.ca
and
blackout.report@hq.doe.gov.

Paper submissions may be sent by mail to:

Dr. Nawal Kamel
Special Adviser to the Deputy Minister
Natural Resources Canada
21st Floor
580 Booth Street
Ottawa, ON K1A 0E4

and

Mr. James W. Glotfelty
Director, Office of Electric Transmission
and Distribution
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

This Interim Report is divided into eight chapters, including this introductory chapter:

- ◆ Chapter 2 provides an overview of the institutional framework for maintaining and ensuring the reliability of the bulk power system in North America, with particular attention to the roles and responsibilities of several types of reliability-related organizations.
- ◆ Chapter 3 discusses conditions on the regional power system before August 14 and on August 14 before the events directly related to the blackout began.
- ◆ Chapter 4 addresses the causes of the blackout, with particular attention to the evolution of conditions on the afternoon of August 14, starting from normal operating conditions, then going into a period of abnormal but still potentially manageable conditions, and finally into an uncontrollable cascading blackout.
- ◆ Chapter 5 provides details on the cascade phase of the blackout.
- ◆ Chapter 6 compares the August 14, 2003, blackout with previous major North American power outages.
- ◆ Chapter 7 examines the performance of the nuclear power plants affected by the August 14 outage.
- ◆ Chapter 8 addresses issues related to physical and cyber security associated with the outage.

This report also includes four appendixes: a description of the investigative process that provided the basis for this report, a list of electricity acronyms, a glossary of electricity terms, and three transmittal letters pertinent to this report from the three Working Groups.